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END OF SEARCH HISTORY

L6: Entry 15 of 24 File: USPT Jan 6, 2004

DOCUMENT-IDENTIFIER: US 6675081 B2
TITLE: Method and system for an in-vehicle computing architecture

Detailed Description Text (15):
As shown in FIGS. 2 and 3, a plurality of software programs and applications provide various features and functions. The plurality of software programs and applications run on a pluralit of processors 212 included in the vehicle 10. The processors 212 are interconnected in a data network so that the plurality of programs and applications can be executed on one or more of the plurality of processors 212.

Detailed Description Text (34):
FIG. 5 shows some of the component programs that form the vehicle-environment modeling programming 210 shown in FIG. 3. These programs are implemented by software running on one or more of the plurality of processors 212 in FIG. 3. These component applications use the outpu from the various sensor devices 202 and 204 as well as data from the geographic database 220. In one embodiment, the outputs from various sensor devices 202 and 204 and the geographic database 220 are provided to the vehicle-environment modeling programming 210 via the common programming interface 216.

Detailed Description Text (52):
The vehicle-environment modeling programming 210 also includes object identifier programming 210(14). The object identifier programming 210(14) receives the list of found objects output from the image processing programming 210(13) and attempts to identify objects by type, size and speed. The object identifier programming 210(14) provides a data output to other programs and applications in the vehicle.

Detailed Description Text (93):
Referring first to FIG. 9, there is shown a logical block diagram showing the major component that implement the adaptive cruise control feature. In FIG. 9, the adaptive cruise control application 224(1) receives data from and outputs data to other systems, programs and applications included in the in-vehicle computing architecture. These other systems, programs and applications are described in the sections that follow.

Detailed Description Text (97):
The monitoring process 250(A) also outputs the data collected from the various driver interfa components to a decision process 250(B). These outputs provided to the decision process 250(B represent physical manipulations by the driver of the driver interface components. The decisi process 250(B) receives each of these outputs from the monitoring process 250(A) and provides translation into data indicating a desired vehicle operation. For example, a signal from a sensor associated with the brakes indicates the force applied by the driver to the brake peda (or other brake component). This signal is collected by the monitoring process 250(A) and provided to the decision process 250(B) that provides an output indicative of a desired force to be applied by the brakes.

Detailed Description Text (98):
The decision process 250(B) provides an output to a send command process 250(C). In turn, the send command process 250(C) provides data outputs to the adaptive cruise control application 224(1). Specifically, the driver interface system 250 provides data to the adaptive cruise control application 224(1) indicating whether the driver has turned on or off the adaptive cruise control feature. Additionally, the driver interface 250 may also provide data to the

adaptive cruise control application 224(1) indicating distance settings desired by the driver which will be used instead of default settings. The driver interface system 250 also provides data to other components and systems in the in-vehicle computing architecture, including the critical vehicle control program 230 and the external condition monitor program 210(11), amon others.

Detailed Description Text (109):
The monitoring process 210(11)(A) provides the data relating to visibility, such as precipitation and light levels, to a visibility calculation process 210(11)(B). The process 2 (11)(B) calculates the visibility and provides output data indicating the visibility to the adaptive cruise control application 224(1), the braking assistance application 224(11), the collision avoidance application 224(13), the collision warning application 224(7)(6), the critical vehicle control program 230, the intersection collision avoidance application 224(7) (3), the obstacle warning application 224(7)(1), and the warning decision application 224(22) The visibility calculating process 210(11)(B) also provides the data indicating the visibilit to the drive recorder 225. If the visibility data represents an exception (i.e., from normal visibility conditions and/or from a previously reported abnormal visibility conditions), the visibility calculating process 210(11)(B) also provides the data indicating the visibility to the external reporting application 224(18) so that it can be transmitted to the service facility 16 and relayed to other vehicles.

Detailed Description Text (110):
The monitoring process 210(11)(A) also provides the data relating to road surface conditions, such as external temperature, precipitation type and level, and barometric pressure to a process 210(11)(C) that calculates a road surface conditions parameter. This road surface condition calculating process 210(11)(C) provides output data indicating the road surface condition parameter to the adaptive cruise control application 224(1), the braking assistance application 224(11), the collision avoidance application 224(13), the collision warning application 224(7)(6), the critical vehicle control program 230, the intersection collision avoidance application 224(7)(3), the obstacle warning application 224(7)(1), and the warning decision application 224(22). The process 210(11)(C) also provides the data indicating the ro surface conditions to the drive recorder 225. If the road surface condition data represents a exception (i.e., from normal road surface conditions and/or from previously reported abnormal road surface conditions), the road surface condition calculating process 210(11)(C) also provides the data indicating the road surface conditions to the external reporting applicatio 224(18) so that it can be transmitted to the service facility 16 and relayed to other vehicle

Detailed Description Text (113):
Referring first to FIG. 15, the user (who may be the driver) selects a desired destination location using the user interface 350. Optionally, the user may also select an origin locatio using the user interface 350, or alternatively, the current position of the vehicle may be specified as the origin location by default. Data indicating the desired destination location and the origin location are provided to a geocoding process 210(15). (If the current position of the vehicle is taken to be the origin, data indicating the current ~~position of the vehicle is provided to the geocoding program 210(15) from the positioning program 210(1).) The geocoding program 210(15)~~ determines the positions of the origin location and destination location relative to the data in the geographic database 320. The geocoding program 210(5) provides a data output indicating the positions of the origin location and destination locati relative to the geographic database 320 to a route calculation process 324(A) which is part o the route calculation application 324(2). (The geocoding process 210(15) may also be part of the route calculation application 324(2) or may be a standalone process.) Using data from the geographic database 320, the route calculation process 324(2)(A) calculates one or more possible routes. The route calculation process 324(2)(A) provides a data output that defines the one or more possible calculated routes. The data output from the route calculation proces 324(2)(A) is provided to a data storage 324(2)(B).

Detailed Description Text (114):
A route selection process 324(2)(B) receives the data that defines the one or more calculated routes. The selection process 324(2)(B) may also receive data that indicates current traffic

conditions from the real-time traffic application 324(9). The selection process 324(2)(B) als receives data that indicates the driver's preferences from the driver profile program 210(12)(D). Using all these inputs, the route selection process 324(2)(B) selects one of the calculated routes. The route selection process 324(2)(B) provides a data output that defines the selected calculated route to the drive recorder 225. The data that defines the selected calculated route is also provided by the route selection process 324(2)(B) to the adaptive cruise control application 224(1), the positioning system 210(1), the car care reminder application 324(8), the concierge services application 324(12), and the route guidance application 324(1). The route selection process 324(2)(B) also provides data to the vehicle-user device manager 270 that enables the selected calculated route to be displayed to the driver via the user interface 350.

Detailed Description Text (115):
FIG. 14 shows the processes related to the route guidance application 324(1). The route guidance application 324(1) includes a process 324(1)(A) that receives the data defining the selected route from the route calculation application 324(2) (in FIG. 15). The route guidance process 324(1)(A) also receives from the positioning program 210(1) (in FIG. 12) data that indicates the current position of the vehicle. The route guidance process 324(1)(A) also receives from the driver profile program 210(12)(D) (in FIG. 11) data that indicates the driver's preferences related to route guidance. These preferences may include, for example, t language in which the guidance should be provided, the medium (i.e., audio, visual display, both) via which the guidance should be provided, etc. Using these inputs, the route guidance process 324(1)(A) determines what kinds of route guidance should be provided to the driver an when such guidance should be provided. More specifically, as the vehicle approaches certain locations along the selected calculated route, route guidance about required maneuvers is provided to the driver. At appropriate locations, the route guidance process 324(1)(A) provid a data output to the vehicle-user device manager 270 indicating the kind of guidance to be provided.

Detailed Description Text (125):
The speed calculation process 224(1)(B) calculates a desired vehicle speed. The speed calculation process 224(1)(B) outputs data indicating the calculated speed along with a reque to adjust the vehicle speed to the critical vehicle control program 230. The speed calculatio process 224(1)(B) continuously updates its calculation to take into account changes in the vehicle environment which might require speeding up, slowing down, or stopping the vehicle. T speed calculation process 224(1)(B) also outputs data indicating the calculated speed and an indication of the request to adjust the vehicle speed to the drive recorder 225. If the speed calculation process 224(1)(B) determines that the adaptive cruise control feature should be disengaged, it also outputs data indicating a request for disengagement to the warning/decisi program 224(22). The critical vehicle control program 230 is described below in connection wi FIG. 19, the warning/decision program 224(22) is described below in connection with FIG. 20, and the drive recorder 225 is described below in connection with FIG. 29.

Detailed Description Text (133):
FIG. 20 shows the components of the warning decision application 224(22) shown in FIG. 9. The warning decision application 224(22) includes an integrator process 224(22)(A). The integrato process 224(22)(A) receives requests from various programs, applications and systems in the vehicle. The programs, applications and systems that send requests to the warning decision process 224(22) include the adaptive cruise control application 224(1), the collision warning application 224(7)(6), the obstacle warning application 224(7)(1), the theft protection application 324(6), the critical vehicle control program 230, the drowsiness warning application 224(20), the mayday warning application 224(7)(7), the vehicle diagnostics progra 210(5) and the fire warning program 224(7)(4). The integrator process 224(22)(A) integrates warning requests from these various systems and outputs a request list to a process 224(22)(B that decides the warning level and type. This decision process 224(22)(B) also receives data indicating the current behavior of the driver from the driver status program 210(6), data indicating the commands requested by the driver from the driver interface 250, data indicatin the historical behavior of the driver from the driver history log 210(7), driver preferences from the profile data file 215(D), and data indicating external conditions, such as hazardous driving conditions, sensed around the vehicle by the external condition monitor application 2

(11). Based upon these inputs, the warning decision process 224(22)(B) outputs data indicatin a warning level and type associated with the warning request received from the integrator process 224(22)(A). This data is provided to a process 224(22)(C) that requests a device control order.

Detailed Description Text (142):
Referring first to FIG. 22, there is shown a block diagram showing the major components that provide the automated mayday feature. This automated mayday feature is provided by a combination of components, including software and hardware components in the mobile informati and services portion of the in-vehicle computing architecture as well as software and hardwar components in the driver assistance portion. The automated mayday feature is organized around the automated mayday application 224(15). The automated mayday application 224(15) receives data from and outputs data to other systems, programs and applications included in the in-vehicle architecture. These other systems, programs and applications are described in the sections that follow.

Detailed Description Text (144):
Referring to FIG. 22, one of the components from which the automated mayday application 224(1 receives data is the vehicle status program 210(4). The vehicle status program 210(4) receive status data from various sensors associated with vehicle hardware components and systems, including the airbag status sensors 204(6), the seatbelt status sensors 204(13), the driver a passenger position sensors 204(10), the traction sensor 204(9), the stability status sensors 204(14), and the fire extinguisher status sensor 204(8), among others. The vehicle status program 210(4) integrates the status data received from these sensors. The vehicle status program 210(4) includes a reporting process 210(4)(A) that provides a data output reporting t status data to the automated mayday application 224(15).

Detailed Description Text (146):
Another of the components from which the automated mayday application 224(15) receives data i the positioning system 210(1). The positioning system 210(1) is described above in connection with FIG. 12. The positioning system 210(1) receives data output from the geographic database 220 and the sensors 202 and 204. The positioning system 210(1) provides data to the automated mayday application 224(15) indicating the position, speed, and heading of the vehicle.

Detailed Description Text (149):
The mayday compiling process 224(15)(B) provides a data output that includes the vehicle position, the type of help requested, accident data, if available, and so on. The mayday compiling process 224(15)(B) provides this data output in a request for a mayday communicatio to a mayday decision application 224(15)(C).

Detailed Description Text (154):
The manual mayday request compiling process 324(15)(A) compiles the input data and provides a output to the mayday decision application 224(15)(C). The manual mayday request compiling process 324(15)(B) may also output data to the driver recorder 225 indicating that a manual mayday request was made.

Detailed Description Text (163):
In connection with the description of FIG. 24, it was stated that the communications manager 260 includes a process 260(A) that accepts requests from the external reporter application 22 (18). FIG. 25 shows the component processes that form the external reporter application 224 (18). The external reporter application 224(18) includes a process 224(18)(A) that compiles external report requests from the external condition monitor 210(11) and the obstacle detecti program 210(2). The process 224(18)(A) may also compile requests from the automated mayday application 224(15) and the manual mayday application 324(15). The external condition monitor 210(11) may request that detected information about external conditions, such as precipitatio or hazardous road conditions, be transmitted to the service provider 16 in order to be relaye to other vehicles. Similarly, the obstacle detection program 210(2) may request that information about newly detected obstacles, such as stalled vehicles, be transmitted to the service provider 16 in order to be relayed to other vehicles. The compiling process 224(18)(A in the external condition reporter application 224(18) provides a data output to the request

accepting process 260(A) in the communications manager 260, as mentioned above.

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L8: Entry 9 of 15 File: USPT Jan 6, 2004

DOCUMENT-IDENTIFIER: US 6675081 B2
TITLE: Method and system for an in-vehicle computing architecture

Assignee Name (1):
Navigation Technologies Corp.

Assignee Group (1):
Navigation Technologies Corp. Chicago IL 02

Brief Summary Text (4):
Aside from using computer technology to support various mechanical functions in vehicles, processors, controllers, or other programmed computer-based technologies are used in vehicles in other ways. Car phones, entertainment equipment (such as CD players), in-vehicle navigatio systems, and emergency roadside assistance systems are examples. In addition, new kinds of equipment that provide entirely new features may become available in vehicles. For example, vehicles may include radar systems that detect obstacles on the road ahead and then automatically brake the vehicle to prevent accidents. Another example is an in-vehicle email system that automatically downloads and reads the driver's email. These new kinds of equipmen are likely to include one or more processors and appropriate programming.

Brief Summary Text (8):
According to another aspect, a new computing architecture for a vehicle is disclosed. The computing architecture organizes the applications and systems in the vehicle into two groups. The systems and applications in the first group are the driver assistance systems. The driver assistance systems include critical mobility-related and safety-related systems, such as the engine, brakes, airbags, and so on, as well as the software that supports these systems. The systems in the second group are the mobile services and information systems. The mobile services and information systems provide for driver and passenger convenience, entertainment, non-emergency communication, and navigation. The first and second groups communicate with eac other through an internal firewall system. The internal firewall system assures that operatio of the driver assistance systems are not compromised by operations of the mobile services and information systems. The driver assistance systems and the mobile services and information systems can exchange information with one or more external networks using a wireless communications system of the vehicle. A second firewall system prevents unauthorized and/or unwanted external data transmissions from interfering with the driver assistance systems and the mobile services and information systems.

Detailed Description Text (15):
As shown in FIGS. 2 and 3, a plurality of software programs and applications provide various features and functions. The plurality of software programs and applications run on a pluralit of processors 212 included in the vehicle 10. The processors 212 are interconnected in a data network so that the plurality of programs and applications can be executed on one or more of the plurality of processors 212.

Detailed Description Text (34):
FIG. 5 shows some of the component programs that form the vehicle-environment modeling programming 210 shown in FIG. 3. These programs are implemented by software running on one or more of the plurality of processors 212 in FIG. 3. These component applications use the outpu from the various sensor devices 202 and 204 as well as data from the geographic database 220. In one embodiment, the outputs from various sensor devices 202 and 204 and the geographic

database 220 are provided to the vehicle-environment modeling programming 210 via the common programming interface 216.

Detailed Description Text (52):
The vehicle-environment modeling programming 210 also includes object identifier programming 210(14). The object identifier programming 210(14) receives the list of found objects output from the image processing programming 210(13) and attempts to identify objects by type, size and speed. The object identifier programming 210(14) provides a data output to other programs and applications in the vehicle.

Detailed Description Text (93):
Referring first to FIG. 9, there is shown a logical block diagram showing the major component that implement the adaptive cruise control feature. In FIG. 9, the adaptive cruise control application 224(1) receives data from and outputs data to other systems, programs and applications included in the in-vehicle computing architecture. These other systems, programs and applications are described in the sections that follow.

Detailed Description Text (97):
The monitoring process 250(A) also outputs the data collected from the various driver interfa components to a decision process 250(B). These outputs provided to the decision process 250(B represent physical manipulations by the driver of the driver interface components. The decisi process 250(B) receives each of these outputs from the monitoring process 250(A) and provides translation into data indicating a desired vehicle operation. For example, a signal from a sensor associated with the brakes indicates the force applied by the driver to the brake peda (or other brake component). This signal is collected by the monitoring process 250(A) and provided to the decision process 250(B) that provides an output indicative of a desired force to be applied by the brakes.

Detailed Description Text (98):
The decision process 250(B) provides an output to a send command process 250(C). In turn, the send command process 250(C) provides data outputs to the adaptive cruise control application 224(1). Specifically, the driver interface system 250 provides data to the adaptive cruise control application 224(1) indicating whether the driver has turned on or off the adaptive cruise control feature. Additionally, the driver interface 250 may also provide data to the adaptive cruise control application 224(1) indicating distance settings desired by the driver which will be used instead of default settings. The driver interface system 250 also provides data to other components and systems in the in-vehicle computing architecture, including the critical vehicle control program 230 and the external condition monitor program 210(11), amon others.

Detailed Description Text (109):
The monitoring process 210(11)(A) provides the data relating to visibility, such as precipitation and light levels, to a visibility calculation process 210(11)(B). The process 2 (11)(B) calculates the visibility and provides output data indicating the visibility to the adaptive cruise control application 224(1), the braking assistance application 224(11), the collision avoidance application 224(13), the collision warning application 224(7)(6), the critical vehicle control program 230, the intersection collision avoidance application 224(7) (3), the obstacle warning application 224(7)(1), and the warning decision application 224(22) The visibility calculating process 210(11)(B) also provides the data indicating the visibilit to the drive recorder 225. If the visibility data represents an exception (i.e., from normal visibility conditions and/or from a previously reported abnormal visibility conditions), the visibility calculating process 210(11)(B) also provides the data indicating the visibility to the external reporting application 224(18) so that it can be transmitted to the service facility 16 and relayed to other vehicles.

Detailed Description Text (110):
The monitoring process 210(11)(A) also provides the data relating to road surface conditions, such as external temperature, precipitation type and level, and barometric pressure to a process 210(11)(C) that calculates a road surface conditions parameter. This road surface condition calculating process 210(11)(C) provides output data indicating the road surface

condition parameter to the adaptive cruise control application 224(1), the braking assistance application 224(11), the collision avoidance application 224(13), the collision warning application 224(7)(6), the critical vehicle control program 230, the intersection collision avoidance application 224(7)(3), the obstacle warning application 224(7)(1), and the warning decision application 224(22). The process 210(11)(C) also provides the data indicating the ro surface conditions to the drive recorder 225. If the road surface condition data represents a exception (i.e., from normal road surface conditions and/or from previously reported abnormal road surface conditions), the road surface condition calculating process 210(11)(C) also provides the data indicating the road surface conditions to the external reporting applicatio 224(18) so that it can be transmitted to the service facility 16 and relayed to other vehicle

Detailed Description Text (113):
Referring first to FIG. 15, the user (who may be the driver) selects a desired destination location using the user interface 350. Optionally, the user may also select an origin locatio using the user interface 350, or alternatively, the current position of the vehicle may be specified as the origin location by default. Data indicating the desired destination location and the origin location are provided to a geocoding process 210(15). (If the current position of the vehicle is taken to be the origin, data indicating the current position of the vehicle is provided to the geocoding program 210(15) from the positioning program 210(1).) The geocoding program 210(15) determines the positions of the origin location and destination location relative to the data in the geographic database 320. The geocoding program 210(5) provides a data output indicating the positions of the origin location and destination locati relative to the geographic database 320 to a route calculation process 324(A) which is part o the route calculation application 324(2). (The geocoding process 210(15) may also be part of the route calculation application 324(2) or may be a standalone process.) Using data from the geographic database 320, the route calculation process 324(2)(A) calculates one or more possible routes. The route calculation process 324(2)(A) provides a data output that defines the one or more possible calculated routes. The data output from the route calculation proces 324(2)(A) is provided to a data storage 324(2)(B).

Detailed Description Text (114):
A route selection process 324(2)(B) receives the data that defines the one or more calculated routes. The selection process 324(2)(B) may also receive data that indicates current traffic conditions from the real-time traffic application 324(9). The selection process 324(2)(B) als receives data that indicates the driver's preferences from the driver profile program 210(12)(D). Using all these inputs, the route selection process 324(2)(B) selects one of the calculated routes. The route selection process 324(2)(B) provides a data output that defines the selected calculated route to the drive recorder 225. The data that defines the selected calculated route is also provided by the route selection process 324(2)(B) to the adaptive cruise control application 224(1), the positioning system 210(1), the car care reminder application 324(8), the concierge services application 324(12), and the route guidance application 324(1). The route selection process 324(2)(B) also provides data to the vehicle-user device manager 270 that enables the selected calculated route to be displayed to the driver via the user interface 350.

Detailed Description Text (115):
FIG. 14 shows the processes related to the route guidance application 324(1). The route guidance application 324(1) includes a process 324(1)(A) that receives the data defining the selected route from the route calculation application 324(2) (in FIG. 15). The route guidance process 324(1)(A) also receives from the positioning program 210(1) (in FIG. 12) data that indicates the current position of the vehicle. The route guidance process 324(1)(A) also receives from the driver profile program 210(12)(D) (in FIG. 11) data that indicates the driver's preferences related to route guidance. These preferences may include, for example, t language in which the guidance should be provided, the medium (i.e., audio, visual display, both) via which the guidance should be provided, etc. Using these inputs, the route guidance process 324(1)(A) determines what kinds of route guidance should be provided to the driver an when such guidance should be provided. More specifically, as the vehicle approaches certain locations along the selected calculated route, route guidance about required maneuvers is provided to the driver. At appropriate locations, the route guidance process 324(1)(A) provid

a data output to the vehicle-user device manager 270 indicating the kind of guidance to be provided.

Detailed Description Text (125):
The speed calculation process 224(1)(B) calculates a desired vehicle speed. The speed calculation process 224(1)(B) outputs data indicating the calculated speed along with a reque to adjust the vehicle speed to the critical vehicle control program 230. The speed calculatio process 224(1)(B) continuously updates its calculation to take into account changes in the vehicle environment which might require speeding up, slowing down, or stopping the vehicle. T speed calculation process 224(1)(B) also outputs data indicating the calculated speed and an indication of the request to adjust the vehicle speed to the drive recorder 225. If the speed calculation process 224(1)(B) determines that the adaptive cruise control feature should be disengaged, it also outputs data indicating a request for disengagement to the warning/decisi program 224(22). The critical vehicle control program 230 is described below in connection wi FIG. 19, the warning/decision program 224(22) is described below in connection with FIG. 20, and the drive recorder 225 is described below in connection with FIG. 29.

Detailed Description Text (133):
FIG. 20 shows the components of the warning decision application 224(22) shown in FIG. 9. The warning decision application 224(22) includes an integrator process 224(22)(A). The integrato process 224(22)(A) receives requests from various programs, applications and systems in the vehicle. The programs, applications and systems that send requests to the warning decision process 224(22) include the adaptive cruise control application 224(1), the collision warning application 224(7)(6), the obstacle warning application 224(7)(1), the theft protection application 324(6), the critical vehicle control program 230, the drowsiness warning application 224(20), the mayday warning application 224(7)(7), the vehicle diagnostics progra 210(5) and the fire warning program 224(7)(4). The integrator process 224(22)(A) integrates warning requests from these various systems and outputs a request list to a process 224(22)(B that decides the warning level and type. This decision process 224(22)(B) also receives data indicating the current behavior of the driver from the driver status program 210(6), data indicating the commands requested by the driver from the driver interface 250, data indicatin the historical behavior of the driver from the driver history log 210(7), driver preferences from the profile data file 215(D), and data indicating external conditions, such as hazardous driving conditions, sensed around the vehicle by the external condition monitor application 2 (11). Based upon these inputs, the warning decision process 224(22)(B) outputs data indicatin a warning level and type associated with the warning request received from the integrator process 224(22)(A). This data is provided to a process 224(22)(C) that requests a device control order.

Detailed Description Text (142):
Referring first to FIG. 22, there is shown a block diagram showing the major components that provide the automated mayday feature. This automated mayday feature is provided by a combination of components, including software and hardware components in the mobile informati and services portion of the in-vehicle computing architecture as well as software and hardwar components in the driver assistance portion. The automated mayday feature is organized around the automated mayday application 224(15). The automated mayday application 224(15) receives data from and outputs data to other systems, programs and applications included in the in-vehicle architecture. These other systems, programs and applications are described in the sections that follow.

Detailed Description Text (144):
Referring to FIG. 22, one of the components from which the automated mayday application 224(1 receives data is the vehicle status program 210(4). The vehicle status program 210(4) receive status data from various sensors associated with vehicle hardware components and systems, including the airbag status sensors 204(6), the seatbelt status sensors 204(13), the driver a passenger position sensors 204(10), the traction sensor 204(9), the stability status sensors 204(14), and the fire extinguisher status sensor 204(8), among others. The vehicle status program 210(4) integrates the status data received from these sensors. The vehicle status program 210(4) includes a reporting process 210(4)(A) that provides a data output reporting t status data to the automated mayday application 224(15).

Detailed Description Text (146):
Another of the components from which the automated mayday application 224(15) receives data i the positioning system 210(1). The positioning system 210(1) is described above in connection with FIG. 12. The positioning system 210(1) receives data output from the geographic database 220 and the sensors 202 and 204. The positioning system 210(1) provides data to the automated mayday application 224(15) indicating the position, speed, and heading of the vehicle.

Detailed Description Text (149):
The mayday compiling process 224(15)(B) provides a data output that includes the vehicle position, the type of help requested, accident data, if available, and so on. The mayday compiling process 224(15)(B) provides this data output in a request for a mayday communicatio to a mayday decision application 224(15)(C).

Detailed Description Text (154):
The manual mayday request compiling process 324(15)(A) compiles the input data and provides a output to the mayday decision application 224(15)(C). The manual mayday request compiling process 324(15)(B) may also output data to the driver recorder 225 indicating that a manual mayday request was made.

Detailed Description Text (163):
In connection with the description of FIG. 24, it was stated that the communications manager 260 includes a process 260(A) that accepts requests from the external reporter application 22 (18). FIG. 25 shows the component processes that form the external reporter application 224 (18). The external reporter application 224(18) includes a process 224(18)(A) that compiles external report requests from the external condition monitor 210(11) and the obstacle detecti program 210(2). The process 224(18)(A) may also compile requests from the automated mayday application 224(15) and the manual mayday application 324(15). The external condition monitor 210(11) may request that detected information about external conditions, such as precipitatio or hazardous road conditions, be transmitted to the service provider 16 in order to be relaye to other vehicles. Similarly, the obstacle detection program 210(2) may request that information about newly detected obstacles, such as stalled vehicles, be transmitted to the service provider 16 in order to be relayed to other vehicles. The compiling process 224(18)(A in the external condition reporter application 224(18) provides a data output to the request accepting process 260(A) in the communications manager 260, as mentioned above.

CLAIMS:

15. The method of claim 14 wherein the land-based vehicle also includes a navigation system that provides guidance to the driver to travel along a calculated route to a destination selected by the driver and wherein said navigation system uses data from the same map databas as the adaptive cruise control system, the automated mayday system and the obstacle warning system.

16. The method of claim 14 further wherein the adaptive cruise control system, the automated mayday system and the obstacle warning system are isolated from the navigation system by a da firewall.